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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/026,880	12/27/2001	Ryuichi Hata	111468	9980

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EXAMINER

INOA, MIDYS

ART UNIT	PAPER NUMBER
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2188

DATE MAILED: 11/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/026,880	HATA, RYUICHI	
	Examiner	Art Unit	
	Midys Inoa	2188	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 January 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
 If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: |

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy was filed on January 22nd, 2002.

Drawings

2. The drawings filed on December 27th, 2001 have been accepted by the examiner.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 7, 8-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding Claim 7, when read in context, it is unclear what is meant by "the search bit line only in a memory block in a search segment to be searched is driven by the search bit line driver".

Regarding Claim 8, when read in context, it is unclear what is meant by the phrase "the search bit line only in a physical segment to be searched is driven by the search bit line driver".

Regarding Claim 9, when read in context, it is unclear what is meant by the phrase "the match flag control signal only in a physical segment to be searched is generated".

Regarding Claim 11, when read in context, the description of the functional relationship between the AND chain and the representative word is unclear. Clarification of the claim language is required.

Claims 10, 12, and 13 are rejected as containing the same deficiencies as the claims they depend from.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 8 and 9 are rejected under 35 U.S.C. 102(e) as being anticipated by Gibson et al. (6,553,453).

Regarding Claim 8, Gibson et al. teaches a content addressable memory device comprising a variable width CAM for searching data of variable widths including a plurality of CAM blocks ("memory blocks") configured to store a plurality of data of variable widths with each having one or more data portions of one or more widths ("physical segments each including one or more memory blocks", Column 2, lines 59-67). The CAM blocks receive search data portions ("search bit line") for searching search data in the CAM blocks. In addition, encoders are configured to concatenate CAM blocks to generate one or more search results and are enabled to select and output match results ("one word circuits which search for a match...", column 3, lines 1-13 and Column 6, lines 1-15).

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Regarding Claim 9, Gibson et al. teaches encoders 212, 214, and 216 which generate match results ("match flags") in response to tag data and data bits (Column 6, lines 1-15 and 38-51).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-6, 10, and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gibson et al. (6,553,453) in view of Naoki et al (JP 2001-056392).

Regarding Claims 1-5, Gibson et al. teaches a content addressable memory device comprising a variable width CAM for searching data of variable widths including a plurality of CAM blocks ("memory blocks") configured to store a plurality of data of variable widths with each having one or more data portions of one or more widths ("physical segments each including one or more memory blocks" and "physical segments of which the number corresponds to the maximum number of words which are combined", Column 2, lines 59-67). Tag segments in each CAM block may be encoded to implement data widths from 32 bits to 256 bits ("configuration set means", Column 4, lines 35-39). It is understood that the Tag value in each CAM block is being held in a register inside each CAM block. Gibson et al. does not teach a logical-segment to physical-segment converting circuit. Naoki et al. teaches the use of a logical-to-physical converter in a CAM system, which is used to output the correct address signals when

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a CAM word is found to be defective, or in the wrong format. For example, if the CAM word is in a logical format when it should be in a physical format the logical-to-physical converter would solve this formatting conflict (see Detailed Description, Paragraphs 0007-0009). It would have been obvious to one of ordinary skill in the art at the time the invention was made to integrate the logical-to-physical converter of Naoki et al. to the system of Gibson et al. since such a converter could prevent formatting conflicts in the system, thus reducing errors and delays.

Regarding Claim 6, Gibson et al. teaches CAM blocks receiving search data portions ("search bit line") for searching search data in the CAM blocks. In addition, encoders are configured to concatenate CAM blocks to generate one or more search results and are enabled to select and output match results ("one word circuits which search for a match..." column 3, lines 1-13 and Column 6, lines 1-15). It is understood that a driver to drive the search data portions to the CAM blocks is present.

Regarding Claim 10, Gibson et al. teaches the invention as set forth by Claim 9 above. In addition, Gibson et al. teaches Tag segments in each CAM block may be encoded to implement data widths from 32 bits to 256 bits ("configuration set means", Column 4, lines 35-39). Gibson et al. does not teach a logical-segment to physical-segment converting circuit. Naoki et al. teaches the use of a logical-to-physical converter in a CAM system, which is used to output the correct address signals when a CAM word is found to be defective, or in the wrong format. For example, if the CAM word is in a logical format when it should be in a physical format the logical-to-physical converter would solve this formatting conflict (see Detailed Description, Paragraphs 0007-0009). It would have been obvious to one of ordinary skill in the art at the time the invention was made to integrate the logical-to-physical converter of Naoki et al. to the system

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of Gibson et al. since such a converter could prevent formatting conflicts in the system, thus reducing errors and delays.

Regarding Claim 14, Gibson et al. teaches a content addressable memory device comprising a variable width CAM for searching data of variable widths including a plurality of CAM blocks ("memory blocks") configured to store a plurality of data of variable widths with each having one or more data portions of one or more widths ("physical segments each including one or more memory blocks", Column 2, lines 59-67). Tag segments in each CAM block may be encoded to implement data widths from 32 bits to 256 bits ("configuration set means", Column 4, lines 35-39). In addition, encoders are configured to concatenate CAM blocks to generate one or more search results and are enabled to select and output match results ("one word circuits which search for a match..." column 3, lines 1-13 and Column 6, lines 1-15). The collection of these encoders essentially forms a "word circuit chain". Gibson et al. does not teach a logical-segment to physical-segment converting circuit. Naoki et al. teaches the use of a logical-to-physical converter in a CAM system, which is used to output the correct address signals when a CAM word is found to be defective, or in the wrong format. For example, if the CAM word is in a logical format when it should be in a physical format the logical-to-physical converter would solve this formatting conflict (see Detailed Description, Paragraphs 0007-0009). It would have been obvious to one of ordinary skill in the art at the time the invention was made to integrate the logical-to-physical converter of Naoki et al. to the system of Gibson et al. since such a converter could prevent formatting conflicts in the system, thus reducing errors and delays.

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Regarding Claim 15, Gibson et al. teaches CAM blocks holding “m bits”, where m could be configured by the Tags to be anywhere from 32 bits to 256 bits, which receive search data portions for searching search data in the CAM blocks. In addition, encoders are configured to concatenate CAM blocks to generate one or more search results and are enabled to select and output match results (“one word circuits which search for a match...” column 3, lines 1-13 and Column 6, lines 1-15). These encoders can be enabled to form a “chain input” when they transmit their individual match results from one CAM block to the next, thus allowing CAM blocks to search for data greater than 32 bits (Column 6 lines 1-37).

Regarding Claim 16, Gibson et al. teaches that a search operation is complete when a match result is outputted for each CAM block being search, thus indicating if a match was found or not (Column 6, lines 38-60).

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- Hill (6,236,585), “Dynamic Data-Precharged, Variable-Entry-Length, Content Addressable Memory Circuit Architecture with Multiple Transistor Threshold Voltage Extensions”
- Ross (6,526,474), “Content Addressable Memory (CAM) with Access to Multiple CAM Arrays Used to Generate Result for Various Matching Sizes”.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Midys Inoa whose telephone number is (703) 305-7850. The examiner can normally be reached on M-F 7:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mano Padmanabhan can be reached on (703) 306-2903. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Midys Inoa

Midys Inoa
Examiner
Art Unit 2188

MI

Mano Padmanabhan

11/3/03

MANO PADMANABHAN

SUPERVISORY PATENT EXAMINER

TC 2100